SEQUENCE LISTING

<110> ECONS, Michael
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STROM, Tim
MEITINGER, Thomas

<120> NOVEL FIBROBLAST GROWTH FACTOR (FGF23) AND METHODS FOR USE
<130> 053884-5001
<140> 09/901,938
<141> 2000-07-10

<150> 60/219,137
<151> 2000-07-19

<160> 35
<170> PatentIn version 3.0

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Gly Ser Ser Trp Gly Gly Leu Ile His Leu Tyr Thr Ala Thr Ala Arg
        35                  40                  45

Asn Ser Tyr His Leu Gln Ile His Lys Asn Gly His Val Asp Gly Ala
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Pro His Gln Thr Ile Tyr Ser Ala Leu Met Ile Arg Ser Glu Asp Ala
65                  70                  75                  80

Gly Phe Val Val Ile Thr Gly Val Met Ser Arg Arg Tyr Leu Cys Met
                85                  90                  95

Asp Phe Arg Gly Asn Ile Phe Gly Ser His Tyr Phe Asp Pro Glu Asn
            100                 105                 110

Cys Arg Phe Gln His Gln Thr Leu Glu Asn Gly Tyr Asp Val Tyr His
        115                 120                 125

Ser Pro Gln Tyr His Phe Leu Val Ser Leu Gly Arg Ala Lys Arg Ala
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Phe Leu Pro Gly Met Asn Pro Pro Pro Tyr Ser Gln Phe Leu Ser Arg
145                 150                 155                 160

Arg Asn Glu Ile Pro Leu Ile His Phe Asn Thr Pro Ile Pro Arg Arg
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His Thr Arg Ser Ala Glu Asp Asp Ser Glu Arg Asp Pro Leu Asn Val
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Leu Lys Pro Arg Ala Arg Met Thr Pro Ala Pro Ala Ser Cys Ser Gln
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Glu Leu Pro Ser Ala Glu Asp Asn Ser Pro Met Ala Ser Asp Pro Leu
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20 25 30

Gly Ser Asn Trp Gly Ser Leu Thr His Leu Tyr Thr Ala Thr Ala Arg
35 40 45

Thr Ser Tyr His Leu Gln Ile His Arg Asp Gly His Val Asp Gly Thr
50 55 60

Pro His Gln Thr Ile Tyr Ser Ala Leu Met Ile Thr Ser Glu Asp Ala
65 70 75 80

Gly Ser Val Val Ile Thr Gly Ala Met Thr Arg Arg Phe Leu Cys Met
85 90 95

Asp Leu His Gly Asn Ile Phe Gly Ser Leu His Phe Ser Pro Glu Asn
100 105 110

Cys Lys Phe Arg Gln Trp Thr Leu Glu Asn Gly Tyr Asp Val Tyr Leu
115 120 125

Ser Gln Lys His His Tyr Leu Val Ser Leu Gly Arg Ala Lys Arg Ile
130 135 140

Phe Gln Pro Gly Thr Asn Pro Pro Pro Phe Ser Gln Phe Leu Ala Arg
145 150 155 160

Arg Asn Glu Val Pro Leu Leu His Phe Tyr Thr Val Arg Pro Arg Arg
165 170 175

His Thr Arg Ser Ala Glu Asp Pro Pro Glu Arg Asp Pro Leu Asn Val
180 185 190

Leu Lys Pro Arg Pro Arg Ala Thr Pro Val Pro Val Ser Cys Ser Arg
195 200 205

Glu Leu Pro Ser Ala Glu Glu Gly Gly Pro Ala Ala Ser Asp Pro Leu
210 215 220

Gly Val Leu Arg Arg Gly Arg Gly Asp Ala Arg Gly Gly Ala Gly Gly
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Ala Asp Arg Cys Arg Pro Phe Pro Arg Phe Val
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<212> PRT

<213> Homo sapiens

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Gln Met His Pro Asp Gly Thr Ile Asp Gly Thr Lys Asp Glu Asn Ser
20 25 30

Asp Tyr Thr Leu Phe Asn Leu Ile Pro Val Gly Leu Arg Val Val Ala
35 40 45

Ile Gln Gly Val Lys Ala Ser Leu Tyr Val Ala Met Asn Gly Glu Gly
50 55 60

Tyr Leu Tyr Ser Ser Asp Val Phe Thr Pro Glu Cys Lys Phe Lys Glu
65 70 75 80

Ser Val Phe Glu Asn Tyr Tyr Val Ile Tyr Ser Ser Thr Leu Tyr Arg
85 90 95

Gln Gln Glu Ser Gly Arg Ala Trp Phe Leu Gly Leu Asn Lys Glu Gly
100 105 110

Gln Ile Met Lys Gly Asn Arg Val Lys Lys Thr Lys Pro Ser Ser His
115 120 125

Phe Val Pro Lys Pro Ile Glu Val Cys Met Tyr
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Leu Lys Gly Ile Val Thr Arg Leu Tyr Cys Arg Gln Gly Tyr Tyr Leu
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Gln Met His Pro Asp Gly Ala Leu Asp Gly Thr Lys Asp Asp Ser Thr
            20                  25                  30

Asn Ser Thr Leu Phe Asn Leu Ile Pro Val Gly Leu Arg Val Val Ala
        35                  40                  45

Ile Gln Gly Val Lys Thr Gly Leu Tyr Ile Ala Met Asn Gly Glu Gly
    50                  55                  60

Tyr Leu Tyr Pro Ser Glu Leu Phe Thr Pro Glu Cys Lys Phe Lys Glu
65                  70                  75                  80

Ser Val Phe Glu Asn Tyr Tyr Val Ile Tyr Ser Ser Met Leu Tyr Arg
                85                  90                  95

Gln Gln Glu Ser Gly Arg Ala Trp Phe Leu Gly Leu Asn Lys Glu Gly
            100                 105                 110

Gln Ala Met Lys Gly Asn Arg Val Lys Lys Thr Lys Pro Ala Ala His
        115                 120                 125

Phe Leu Pro Lys Pro Leu Glu Val Ala Met Tyr
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<210> 16

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<213> Homo Sapiens

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Leu Lys Gly Ile Val Thr Lys Leu Tyr Ser Arg Gln Gly Tyr His Leu
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Gln Leu Gln Ala Asp Gly Thr Ile Asp Gly Thr Lys Asp Glu Asp Ser
            20                  25                  30

Thr Tyr Thr Leu Phe Asn Leu Ile Pro Val Gly Leu Arg Val Val Ala
        35                  40                  45

Ile Gln Gly Val Gln Thr Lys Leu Tyr Leu Ala Met Asn Ser Glu Gly
    50                  55                  60

Tyr Leu Tyr Thr Ser Glu Leu Phe Thr Pro Glu Cys Lys Phe Lys Glu
65                  70                  75                  80

Ser Val Phe Glu Asn Tyr Tyr Val Thr Tyr Ser Ser Met Ile Tyr Arg
                85                  90                  95
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Gln Gln Gln Ser Gly Arg Gly Trp Tyr Leu Gly Leu Asn Lys Glu Gly
100 105 110

Glu Ile Met Lys Gly Asn His Val Lys Lys Asn Lys Pro Ala Ala His
115 120 125

Phe Leu Pro Lys Pro Leu Lys Val Ala Met Tyr
130 135

<210> 17

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<212> PRT

<213> Homo Sapiens

<400> 17

Leu Lys Gly Ile Val Thr Lys Leu Phe Cys Arg Gln Gly Phe Tyr Leu
1 5 10 15

Gln Ala Asn Pro Asp Gly Ser Ile Gln Gly Thr Pro Glu Asp Thr Ser
20 25 30

Ser Phe Thr His Phe Asn Leu Ile Pro Val Gly Leu Arg Val Val Thr
35 40 45

Ile Gln Ser Ala Lys Leu Gly His Tyr Met Ala Met Asn Ala Glu Gly
50 55 60

Leu Leu Tyr Ser Ser Pro His Phe Thr Ala Glu Cys Arg Phe Lys Glu
65 70 75 80

Cys Val Phe Glu Asn Tyr Tyr Val Leu Tyr Ala Ser Ala Leu Tyr Arg
85 90 95

Gln Arg Arg Ser Gly Arg Ala Trp Tyr Leu Gly Leu Asp Lys Glu Gly
100 105 110

Gln Val Met Lys Gly Asn Arg Val Lys Lys Thr Lys Ala Ala Ala His
115 120 125

Phe Leu Pro Lys Leu Leu Glu Val Ala Met Tyr
130 135

<210> 18

<211> 141

<212> PRT

<213> Homo Sapiens

<400> 18

Leu Lys Gly Ile Leu Arg Arg Arg Gln Leu Tyr Cys Arg Thr Gly Phe
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His Leu Glu Ile Phe Pro Asn Gly Thr Val His Gly Thr Arg His Asp
20 25 30

His Ser Arg Phe Gly Ile Leu Glu Phe Ile Ser Leu Ala Val Gly Leu
35 40 45

Ile Ser Ile Arg Gly Val Asp Ser Gly Leu Tyr Leu Gly Met Asn Glu
50 55 60

Arg Gly Glu Leu Tyr Gly Ser Lys Lys Leu Thr Arg Glu Cys Val Phe
65 70 75 80

Arg Glu Gln Phe Glu Glu Asn Tyr Asn Asn Thr Tyr Ala Ser Thr Leu
85 90 95

Tyr Lys His Ser Asp Ser Glu Arg Gln Tyr Tyr Val Ala Leu Asn Lys
100 105 110

Asp Gly Ser Pro Arg Glu Gly Tyr Arg Thr Lys Arg His Gln Lys Phe
115 120 125

Thr His Phe Leu Pro Arg Pro Val Asp Pro Ser Lys Leu
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<210> 19

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<213> Homo Sapiens

<400> 19

Leu Lys Gly Ile Leu Arg Arg Arg Gln Leu Tyr Cys Arg Thr Gly Phe
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His Leu Glu Ile Phe Pro Asn Gly Thr Ile Gln Gly Thr Arg Lys Asp
20 25 30

His Ser Arg Phe Gly Ile Leu Glu Phe Ile Ser Ile Ala Val Gly Leu
35 40 45

Val Ser Ile Arg Gly Val Asp Ser Gly Leu Tyr Leu Gly Met Asn Glu
50 55 60

Lys Gly Glu Leu Tyr Gly Ser Glu Lys Leu Thr Gln Glu Cys Val Phe
65 70 75 80

Arg Glu Gln Phe Glu Glu Asn Trp Tyr Asn Thr Tyr Ser Ser Asn Leu
85 90 95

Tyr Lys His Val Thr Thr Gly Arg Arg Tyr Tyr Val Ala Leu Asn Lys
100 105 110

Asp Gly Thr Pro Arg Glu Gly Thr Arg Thr Lys Arg His Gln Lys Phe
115 120 125

Thr His Phe Leu Pro Arg Pro Val Asp Pro Asp Lys Val
130 135 140

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<212> PRT

<213> Homo Sapiens

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Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr
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Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu
20 25 30

Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val
35 40 45

Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys
50 55 60

Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu
65 70 75 80

Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn
85 90 95

Trp Gln His Asn Gly Gln Met Tyr Val Ala Leu Asn Gly Tyr Gly Ala
100 105 110

Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe
115 120 125

Leu Pro Met Val Val His Ser
130 135

<210> 21

<211> 136

<212> PRT

<213> Homo Sapiens

<400> 21

Met Glu Gly Gly Asp Ile Arg Val Arg Arg Leu Phe Cys Arg Thr Gln
1 5 10 15

Trp Tyr Leu Arg Ile Asp Lys Arg Gly Lys Val Lys Gly Thr Gln Glu
20 25 30

Met Lys Asn Asn Tyr Asn Ile Met Glu Ile Arg Thr Val Ala Val Gly
35 40 45

Ile Val Ala Ile Lys Gly Val Glu Ser Glu Phe Tyr Leu Ala Met Asn
50 55 60

Lys Glu Gly Lys Leu Tyr Ala Lys Glu Lys Cys Asn Glu Asp Cys Asn
65 70 75 80

Phe Lys Glu Leu Ile Leu Glu Asn His Tyr Asn Thr Tyr Ala Ser Ala
85 90 95

Lys Trp Thr His Asn Gly Gly Glu Met Phe Val Ala Leu Asn Gln Lys
100 105 110

Gly Ile Pro Val Arg Gly Lys Lys Thr Lys Lys Glu Gln Lys Thr Ala
115 120 125

His Phe Leu Pro Met Ala Ile Thr
130 135

<210> 22

<211> 150

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<213> Homo Sapiens

<400> 22

Leu Gly Gly Ala Pro Arg Arg Arg Lys Leu Tyr Cys Ala Thr Lys Tyr
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His Leu Gln Leu His Pro Ser Gly Arg Val Asn Gly Ser Leu Glu Asn
20 25 30

Ser Ala Tyr Ser Ile Leu Glu Ile Thr Ala Val Glu Val Gly Ile Val
35 40 45

Ala Ile Arg Gly Leu Phe Ser Gly Arg Tyr Leu Ala Met Asn Lys Arg

50 55 60

Gly Arg Leu Tyr Ala Ser Glu His Tyr Ser Ala Glu Cys Glu Phe Val
65 70 75 80

Glu Arg Ile His Glu Leu Gly Tyr Asn Thr Tyr Ala Ser Arg Leu Tyr
85 90 95

Arg Thr Val Ser Ser Thr Pro Gly Ala Arg Arg Gln Pro Ser Ala Glu
100 105 110

Arg Leu Trp Tyr Val Ser Val Asn Gly Lys Gly Arg Pro Arg Arg Gly
115 120 125

Phe Lys Thr Arg Arg Thr Gln Lys Ser Ser Leu Phe Leu Pro Arg Val
130 135 140

Leu Asp His Arg Asp His
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<210> 23

<211> 137

<212> PRT

<213> Homo Sapiens

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Pro Pro Gly Asn Tyr Lys Lys Pro Lys Leu Leu Tyr Cys Ser Asn Gly
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Gly Ser Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp Gly Thr Arg
20 25 30

Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala Glu Ser Val
35 40 45

Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln Tyr Leu Ala Met
50 55 60

Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn Glu Glu Cys
65 70 75 80

Leu Phe Leu Glu Arg Leu Glu Glu Glu His Tyr Asn Thr Tyr Ile Ser
85 90 95

Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys Lys Asn Gly
100 105 110

Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys Ala Ile Leu
115 120 125

Phe Leu Pro Leu Pro Val Ser Ser Asp

130 135

<210> 24

<211> 134

<212> PRT

<213> Homo Sapiens

<400> 24

Pro Pro Gly His Phe Lys Asp Pro Lys Arg Leu Tyr Cys Lys Asn Gly
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Gly Phe Phe Leu Arg Ile His Pro Asp Gly Arg Val Asp Gly Val Arg
20 25 30

Glu Lys Ser Asp Pro His Ile Lys Leu Gln Leu Gln Ala Glu Glu Arg
35 40 45

Gly Val Val Ser Ile Lys Gly Val Cys Ala Asn Arg Tyr Leu Ala Met
50 55 60

Lys Glu Asp Gly Arg Leu Leu Ala Ser Lys Cys Val Thr Asp Glu Cys
65 70 75 80

Phe Phe Phe Glu Arg Leu Glu Ser Asn Asn Tyr Asn Thr Tyr Arg Ser
85 90 95

Arg Lys Tyr Thr Ser Trp Tyr Val Ala Leu Lys Arg Thr Gly Gln Tyr
100 105 110

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115 120 125

Pro Met Ser Ala Lys Ser
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<213> Homo Sapiens

<400> 25

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Gly Phe His Leu Gln Ala Leu Pro Asp Gly Arg Ile Gly Gly Ala His

20 25 30

Ala Asp Thr Arg Asp Ser Leu Leu Glu Leu Ser Pro Val Glu Arg Gly
35 40 45

Val Val Ser Ile Phe Gly Val Ala Ser Arg Phe Phe Val Ala Met Ser
50 55 60

Ser Lys Gly Lys Leu Tyr Gly Ser Pro Phe Phe Thr Asp Glu Cys Thr
65 70 75 80

Phe Lys Glu Ile Leu Leu Pro Asn Asn Tyr Asn Ala Tyr Glu Ser Tyr
85 90 95

Lys Tyr Pro Gly Met Phe Ile Ala Leu Ser Lys Asn Gly Lys Thr Lys
100 105 110

Lys Gly Asn Arg Val Ser Pro Thr Met Lys Val Thr His Phe Leu Pro
115 120 125

Arg Leu
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<212> PRT

<213> Homo Sapiens

<400> 26

Leu Val Gly Ile Lys Arg Gln Arg Arg Leu Tyr Cys Asn Val Gly Ile
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Gly Phe His Leu Gln Val Leu Pro Asp Gly Arg Ile Ser Gly Thr His
20 25 30

Glu Glu Asn Pro Tyr Ser Leu Leu Glu Ile Ser Thr Val Glu Arg Gly
35 40 45

Val Val Ser Leu Phe Gly Val Arg Ser Ala Leu Phe Val Ala Met Asn
50 55 60

Ser Lys Gly Arg Leu Tyr Ala Thr Pro Ser Phe Gln Glu Glu Cys Lys
65 70 75 80

Phe Arg Glu Thr Leu Leu Pro Asn Asn Tyr Asn Ala Tyr Glu Ser Asp
85 90 95

Leu Tyr Gln Gly Thr Tyr Ile Ala Leu Ser Lys Tyr Gly Arg Val Lys
100 105 110

Arg Gly Ser Lys Val Ser Pro Ile Met Thr Val Thr His Phe Leu Pro

115 120 125

Arg Ile
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<210> 27

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<212> PRT

<213> Homo Sapiens

<400> 27

Ser Pro Ser Gly Arg Arg Thr Gly Ser Leu Tyr Cys Arg Val Gly Ile
1 5 10 15

Gly Phe His Leu Gln Ile Tyr Pro Asp Gly Lys Val Asn Gly Ser His
20 25 30

Glu Ala Asn Met Leu Ser Val Leu Glu Ile Phe Ala Val Ser Gln Gly
35 40 45

Ile Val Gly Ile Arg Gly Val Phe Ser Asn Lys Phe Leu Ala Met Ser
50 55 60

Lys Lys Gly Lys Leu His Ala Ser Ala Lys Phe Thr Asp Asp Cys Lys
65 70 75 80

Phe Arg Glu Arg Phe Gln Glu Asn Ser Tyr Asn Thr Tyr Ala Ser Ala
85 90 95

Ile His Arg Thr Glu Lys Thr Gly Arg Glu Trp Tyr Val Ala Leu Asn
100 105 110

Lys Arg Gly Lys Ala Lys Arg Gly Cys Ser Pro Arg Val Lys Pro Gln
115 120 125

His Ile Ser Thr His Phe Leu Pro Arg Phe Lys Gln Ser Glu Gln Pro
130 135 140

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<212> PRT

<213> Homo Sapiens

<400> 28

Val Ser Arg Lys Gln Leu Arg Leu Tyr Gln Leu Tyr Ser Arg Thr Ser

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Gln Lys His Ile Gln Val Leu Gly Arg Arg Ile Ser Ala Arg Gly Glu
20 25 30

Asp Gly Asp Lys Tyr Ala Gln Leu Leu Val Glu Thr Asp Thr Phe Gly
35 40 45

Ser Gln Val Arg Ile Lys Gly Lys Glu Thr Lys Phe Tyr Leu Cys Met
50 55 60

Asn Arg Lys Gly Lys Leu Val Gly Lys Pro Asp Gly Thr Ser Lys Glu
65 70 75 80

Cys Val Phe Ile Glu Lys Val Leu Glu Asn Asn Tyr Thr Ala Leu Met
85 90 95

Ser Ala Lys Tyr Ser Gly Trp Tyr Val Gly Phe Thr Lys Lys Gly Arg
100 105 110

Pro Arg Lys Gly Pro Lys Thr Arg Glu Asn Gln Gln Asp Val His Phe
115 120 125

Met Lys Arg Tyr Pro Lys Gly Gln Pro
130 135

<210> 29

<211> 139

<212> PRT

<213> Homo Sapiens

<400> 29

Leu Ser Arg Arg Leu Ile Arg Thr Tyr Gln Leu Tyr Ser Arg Thr Ser
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Gly Lys His Val Gln Val Leu Ala Asn Lys Arg Ile Asn Ala Met Ala
20 25 30

Glu Asp Gly Thr Pro Phe Ala Lys Leu Ile Val Glu Thr Asp Thr Lys
35 40 45

Gly Ser Arg Val Arg Val Arg Gly Ala Glu Thr Gly Leu Tyr Ile Cys
50 55 60

Met Asn Lys Lys Gly Lys Leu Ile Ala Lys Ser Asn Gly Lys Gly Lys
65 70 75 80

Asp Cys Val Phe Thr Phe Ile Val Leu Glu Asn Asn Tyr Thr Ala Leu
85 90 95

Gln Asn Ala Lys Tyr Gly Glu Trp Tyr Met Asn Phe Thr Arg Lys Gly

100 105 110

Arg Pro Arg Lys Gly Ser Lys Thr Arg Gln His Gln Arg Glu Val His
115 120 125

Phe Met Lys Arg Leu Pro Arg Gly His His Thr
130 135

<210> 30

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<212> PRT

<213> Homo Sapiens

<400> 30

Leu Ser Arg Arg Gln Ile Arg Glu Tyr Gln Leu Tyr Ser Arg Thr Ser
1 5 10 15

Gly Lys His Val Gln Val Thr Gly Arg Arg Ile Ser Ala Thr Ala Glu
20 25 30

Asp Gly Asn Lys Phe Lys Lys Leu Ile Val Glu Thr Asp Thr Phe Gly
35 40 45

Ser Arg Val Arg Ile Lys Gly Ala Glu Ser Glu Lys Tyr Ile Cys Met
50 55 60

Asn Lys Arg Gly Lys Leu Ile Gly Lys Pro Ser Gly Lys Ser Lys Asp
65 70 75 80

Cys Val Phe Thr Glu Ile Val Leu Glu Asn Asn Tyr Thr Ala Phe Gln
85 90 95

Asn Ala Arg His Glu Gly Trp Phe Met Ala Phe Thr Arg Gln Gly Arg
100 105 110

Pro Arg Gln Ala Ser Arg Ser Arg Gln Asn Gln Arg Glu Ala His Phe
115 120 125

Ile Lys Arg Leu Tyr Gln Gly Gln Leu Pro
130 135

<210> 31

<211> 135

<212> PRT

<213> Homo Sapiens

<400> 31

Gly Trp Gly Lys Ile Thr Arg Leu Gln Tyr Leu Tyr Ser Ala Gly Pro
1 5 10 15

Tyr Val Ser Asn Cys Phe Leu Arg Ile Arg Ser Asp Gly Ser Val Asp
20 25 30

Cys Glu Glu Asp Gln Asn Glu Arg Asn Leu Leu Glu Phe Arg Ala Val
35 40 45

Ala Leu Lys Thr Ile Ala Ile Lys Asp Val Ser Ser Val Arg Tyr Leu
50 55 60

Cys Met Ser Ala Asp Gly Lys Ile Tyr Gly Leu Ile Arg Tyr Ser Glu
65 70 75 80

Glu Asp Cys Thr Phe Arg Glu Glu Met Asp Cys Leu Gly Tyr Asn Gln
85 90 95

Tyr Arg Ser Met Lys His His Leu His Ile Ile Phe Ile Gln Ala Lys
100 105 110

Pro Arg Glu Gln Leu Gln Asp Gln Lys Pro Ser Asn Phe Ile Pro Val
115 120 125

Phe His Arg Ser Phe Phe Glu
130 135

<210> 32

<211> 139

<212> PRT

<213> Homo Sapiens

<400> 32

Gly Trp Gly Asp Pro Ile Arg Leu Arg His Leu Tyr Thr Ser Gly Pro
1 5 10 15

His Gly Leu Ser Ser Cys Phe Leu Arg Ile Arg Ala Asp Gly Val Val
20 25 30

Asp Cys Ala Arg Gly Gln Ser Ala His Ser Leu Leu Glu Ile Lys Ala
35 40 45

Val Ala Leu Arg Thr Val Ala Ile Lys Gly Val His Ser Val Arg Tyr
50 55 60

Leu Cys Asn Gly Ala Asp Gly Lys Asn Gln Gly Leu Leu Gln Tyr Ser
65 70 75 80

Glu Glu Asp Cys Ala Phe Glu Glu Glu Ile Arg Pro Asp Gly Tyr Asn

85 90 95

Val Tyr Arg Ser Glu Lys His Arg Leu Pro Val Ser Leu Ser Ser Ala
100 105 110

Lys Gln Arg Gln Leu Tyr Lys Asn Arg Gly Phe Leu Pro Leu Ser His
115 120 125

Phe Leu Pro Met Leu Pro Met Val Pro Glu Glu
130 135

<210> 33

<211> 136

<212> PRT

<213> Homo Sapiens

<400> 33

Gln Phe Gly Gly Gln Val Arg Gln Arg Tyr Leu Tyr Thr Asp Asp Ala
1 5 10 15

Gln Gln Thr Glu Ala His Leu Glu Ile Arg Glu Asp Gly Thr Val Gly
20 25 30

Gly Ala Ala Asp Gln Ser Pro Glu Ser Leu Leu Gln Leu Lys Ala Leu
35 40 45

Lys Pro Gly Val Ile Gln Ile Leu Gly Val Lys Thr Ser Arg Phe Leu
50 55 60

Cys Gln Arg Glu Asp Gly Ala Leu Tyr Gly Ser Leu His Phe Asp Pro
65 70 75 80

Glu Ala Cys Ser Phe Arg Glu Leu Leu Leu Glu Asp Gly Tyr Asn Val
85 90 95

Tyr Gln Ser Glu Ala His Gly Leu Pro Leu His Leu Pro Gly Asn Lys
100 105 110

Ser Pro His Arg Asp Pro Ala Pro Arg Gly Pro Ala Arg Phe Leu Pro
115 120 125

Leu Pro Gly Leu Pro Pro Ala Leu
130 135

<210> 34

<211> 145

<212> PRT

<213> Homo Sapiens

<400> 34

Ser Trp Gly Gly Leu Ile His Leu Tyr Thr Ala Thr Ala Arg Asn Ser
1 5 10 15

Tyr His Leu Gln Ile His Lys Asn Gly His Val Asp Gly Ala Pro His
20 25 30

Gly Thr Ile Tyr Ser Ala Leu Met Ile Arg Ser Glu Asp Ala Gly Phe
35 40 45

Val Val Ile Thr Gly Val Met Ser Arg Arg Tyr Leu Cys Met Asp Phe
50 55 60

Arg Gly Asn Ile Phe Gly Ser His Tyr Phe Asp Pro Glu Asn Cys Arg
65 70 75 80

Phe Gln His Gln Thr Leu Glu Asn Gly Tyr Asp Val Tyr His Ser Pro
85 90 95

Gln Tyr His Phe Leu Val Ser Leu Gly Arg Ala Lys Arg Ala Phe Leu
100 105 110

Pro Gly Met Asn Pro Pro Pro Tyr Ser Gln Phe Leu Ser Arg Arg Asn
115 120 125

Glu Ile Pro Leu Ile His Phe Asn Thr Pro Ile Pro Arg Arg His Thr
130 135 140

Arg
145

<210> 35

<211> 4

<212> PRT

<213> unidentified

<220>

<221> Xaa

<222> (2)..(3)

<223> Xaa can be any naturally occurring amino acid

<220>

<221> Xaa

<222> (4)..(4)

<223> Xaa = R or S

<400> 35

Arg Xaa Xaa Xaa
1